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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,990	10/13/2005	Chiaki Nakajima	80664(302760)	5838

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EXAMINER	
MCCOMMAS, STUART S	

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2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,990	NAKAJIMA, CHIAKI	
	Examiner	Art Unit	
	Stuart McCommas	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being anticipated by Nakamura (Japanese Patent Application Publication 05-067810), hereinafter referenced as Nakamura, in view of Kimball (United States Patent 5,313,141), hereinafter referenced as Kimball.

Regarding claim 1, Nakamura discloses a display LED drive circuit comprising:

a route for serially connecting a constant current circuit (3), a first display LED circuit (LED 30 and switch 20) in which a corresponding switching element (20) is serially connected to a first display LED (30), and a second display LED circuit (LED 31 and switch 21) in which a corresponding switching element (21) is serially connected to a second display LED (paragraph 7; paragraph 9; figures 1-2).

a first resistor circuit (switching element 20 and resistor 10), in which a corresponding switching element (20) is serially connected to a first resistor (10) that generates the same potential difference as the potential difference generated by the first display LED (30), connected to the first display LED circuit in parallel (paragraph 7; paragraphs 9-10; figure 1).

a second resistor circuit (switching element 21 and resistor 11), in which a corresponding switching element (21) is serially connected to a second resistor (11) that generates the same potential difference as the potential difference generated by the second display LED (31), connected in parallel with the second display LED circuit, wherein single pole double throw switch switches between the display LED circuit and the resistor circuit connected in parallel to the LED circuit (figure 1).

In a similar field of invention Kimball discloses a switch circuit 27 having a switching element (34) and a switching element (33), which are controlled to be opened and closed in opposite ways to connect one terminal 23 alternately to two other terminals (column 3 lines 42-67; column 3 lines 1-12; figure 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakamura with Kimball by specifically providing that the corresponding switching element and the corresponding switching element are controlled to be opened and closed in opposite ways for the purpose of allowing two switches to be used to apply voltage and current to the same terminal, i.e. to replace the switches 20 and 21 of Nakamura with the switching element 27 (switches 33 and 34 switched in alternative manner – in opposite way) of Kimball, since this replacement will function just the same and would not require undue experimentation or bring about unexpected result.

Regarding claim 2, Nakamura and Kimball, the combination discloses everything as applied above, further Nakamura discloses that the second resistor circuit comprises

a cut-off switching element (2) serially connected to the second resistor (11) and the corresponding switching element (figure 1), and opens and closes the cut-off switching element (2) synchronously with the corresponding switching element (20) of the first display LED circuit disposed on an upstream side as the switch (2) closes to allow current to flow through the circuit and opens to stop current from flowing through the circuit (paragraph 7; paragraphs 9-10; figure 1).

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Kovarik et al. (United States Patent Application Publication 2004/0046673), hereinafter referenced as Kovarik, and further in view of Kimball.

Regarding claim 3, Nakamura discloses a display LED drive circuit comprising:

a route for serially connecting a constant current circuit (3), a display LED circuit in which a corresponding switching element (20) is serially connected to a display LED (paragraph 7; paragraphs 9-10; figure 1).

a resistor circuit (switching element 20 and resistor 10), in which a corresponding switching element (20) is serially connected to a first resistor (10) that generates the same potential difference as the potential difference generated by the first display LED (30), connected to the first display LED circuit in parallel (paragraph 7; paragraphs 9-10; figure 1). Further Nakamura discloses that the single pole double throw switch switches between the display LED circuit and the resistor circuit (figure 1).

However Nakamura fails to disclose a constant voltage diode and that an output terminal for deriving voltage is provided between the display LED circuit and the

constant voltage diode and wherein the corresponding switching element and the corresponding switching element are controlled to be opened and closed in opposite ways.

In a similar field of invention Kovarik discloses a constant voltage diode (72) and that an output terminal for deriving voltage for a resistor and LED network is provided between the display LED circuit (58) and the constant voltage diode (paragraphs 19-23; figure 3).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakamura with Kovarik by specifically providing a constant voltage diode and that an output terminal for deriving voltage is provided between the display LED circuit and the constant voltage diode for the purpose of regulating voltage precisely to maintain a constant voltage to improve the performance of the display (paragraph 21).

In a similar field of invention Kimball discloses a switch circuit 27 having a switching element (34) and a switching element (33), which are controlled to be opened and closed in opposite ways to connect one terminal 23 alternately (in opposite way) to two other terminals (column 3 lines 42-67; column 3 lines 1-12; figure 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakamura with Kimball by specifically providing that the corresponding switching element and the corresponding switching element are controlled to be opened and closed in opposite ways for the purpose of allowing two

switches to be used to apply voltage and current to the same terminal, i.e. to replace the switches 20 and 21 of Nakamura with the switching element 27 (switches 33 and 34 switched in alternative manner – in opposite way) of Kimball, since this replacement will function just the same and would not require undue experimentation or bring about unexpected result.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blossfeldt (United States Patent 4,355,308), hereinafter referenced as Blossfeldt, in view of Marion (United States Patent 4,198,629), hereinafter referenced as Marion, and further in view of Nakamura, Kovarik and Kimball.

Regarding claim 4, Blossfeldt discloses a display LED drive circuit comprising:

a first current route and a second current route (figure 1) which are connected to a power circuit in parallel, the first route comprising: a first constant current circuit (BG), a first display LED circuit in which a corresponding switching element (T1) is serially connected to a first display LED (LED1) and a second display LED circuit in which a corresponding switching element (T3) is serially connected to a second display LED (T3) connected in series (column 4 lines 1-15; column 4 lines 57-63; figure 1), however Blossfeldt fails to disclose a first resistor circuit, in which a corresponding switching element is serially connected to a first resistor that generates the same potential difference as the potential difference generated by the first display LED, connected to the first display LED circuit in parallel, and a second resistor circuit, in which a cut-off switching element and a corresponding switching element are serially connected to a second resistor that generates the same potential difference as the potential difference

generated by the second display LED, connected to the second display LED circuit in parallel; the second route comprising: a second constant current circuit; a third display LED circuit in which a corresponding switching element is serially connected to a third display LED; and a constant voltage diode; a third resistor circuit, in which a corresponding switching element is serially connected to a third resistor that generates the same potential difference as the potential difference generated by the third display LED, connected to the third display LED in parallel; and wherein the corresponding switching elements of the respective display LED circuits and the corresponding switching elements of the respective resistor circuits connected in parallel correspondingly with the respective display LED circuits are controlled to be opened and closed in opposite ways, and in that the cut-off switching element is controlled to be opened and closed synchronously with the corresponding switching element of the first display LED circuit disposed on an upstream side, and in that an output terminal for deriving a voltage is provided between the third display LED circuit and the constant voltage diode.

In a similar field of invention Marion discloses that the second route comprises a second constant current circuit (figure 3; figure 5; column 19 lines 29-35).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Blossfeldt by specifically providing a second constant current circuit on the second route for the purpose of equalizing the brightness of the LED's to improve the performance of the display and to save power (column 11 lines 2-5; column 12 lines 34-52).

In a similar field of invention Nakamura discloses a first resistor circuit (switching element 20 and resistor 10), in which a corresponding switching element (20) is serially connected to a first resistor (10) that generates the same potential difference as the potential difference generated by the first display LED (30), connected to the first display LED circuit in parallel (paragraph 7; paragraphs 9-10; figure 1). Nakamura further discloses a second resistor circuit (switching element 21 and resistor 11), in which a corresponding switching element (21) and a cut off switching element (2) are serially connected to a second resistor (11) that generates the same potential difference as the potential difference generated by the second display LED (31), connected in parallel with the second display LED circuit (figure 1). Nakamura further discloses a third display LED circuit in which a corresponding switching element (29) is serially connected to a third display LED (39), and a third resistor circuit, in which a corresponding switching element (29) is serially connected to a third resistor (19) that generates the same potential difference as the potential difference generated by the third display LED, connected to the third display LED in parallel (paragraph 7; paragraphs 9-10; figure 1). Further Nakamura discloses that the display wherein the single pole double throw switches switch between the display LED circuits and the resistor circuits connected in parallel to the LED circuits (paragraph 7; paragraphs 9-10; figure 1), and that the second resistor circuit comprises a cut-off switching element (2) serially connected to the second resistor (11) and the corresponding switching element (figure 1), and opens and closes the cut-off switching element (2) synchronously with the corresponding switching element (20) of the first display LED circuit disposed on an

upstream side as the switch (2) closes to allow current to flow through the circuit and opens to stop current from flowing through the circuit (paragraph 7; paragraphs 9-10; figure 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Blossfeldt by specifically providing a first resistor circuit, in which a corresponding switching element is serially connected to a first resistor that generates the same potential difference as the potential difference generated by the first display LED, connected to the first display LED circuit in parallel, and a second resistor circuit, in which a cut-off switching element and a corresponding switching element are serially connected to a second resistor that generates the same potential difference as the potential difference generated by the second display LED, connected to the second display LED circuit in parallel, and a third display LED circuit in which a corresponding switching element is serially connected to a third display LED, and a third resistor circuit, in which a corresponding switching element is serially connected to a third resistor that generates the same potential difference as the potential difference generated by the third display LED, connected to the third display LED in parallel; and wherein the switching elements of the respective display LED circuits and of the respective resistor circuits connected in parallel with the respective display LED circuits are controlled to switch between the resistor circuit and the LED circuit and in that the cut-off switching element is controlled to be opened and closed synchronously with the corresponding switching element of the first display LED circuit

disposed on an upstream side for the purpose of controlling current to reduce power loss and control power consumption (paragraph 6).

In a similar field of invention Kovarik discloses a constant voltage diode (72) and that an output terminal for deriving voltage for a resistor and LED network is provided between the display LED circuit (58) and the constant voltage diode (paragraphs 19-23; figure 3).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Blossfeldt by specifically providing a constant voltage diode and that an output terminal for deriving voltage is provided between the display LED circuit and the constant voltage diode for the purpose of regulating voltage precisely to maintain a constant voltage to improve the performance of the display (paragraph 21).

In a similar field of invention Kimball discloses a switch circuit 27 having a switching element (34) and a switching element (33), which are controlled to be opened and closed in opposite ways to connect one terminal 23 alternately (in opposite way) to two other terminals (column 3 lines 42-67; column 3 lines 1-12; figure 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Blossfeldt with Kimball by specifically providing that the corresponding switching element and the corresponding switching element are controlled to be opened and closed in opposite ways for the purpose of allowing two

switches to be used to apply voltage and current to the same terminal at different times at low frequency to conserve power (column 2 lines 37-52).

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blossfeldt in view of Marion, Nakamura, Kovarik and Kimball, and further in view of Tanaka (United States Patent 6,320,322), hereinafter referenced as Tanaka.

Regarding claim 5, Blossfeldt, Nakamura, Marion, Kovarik and Kimball, the combination discloses everything as applied above, however the combination fails to disclose that one of the first and the third display LEDs is a green display LED, and the other one is a blue display LED, however the examiner maintains that it was well known in the art to provide that one of the first and the third display LEDs is a green display LED, and the other one is a blue display LED, as taught by Tanaka.

In a similar field of invention Tanaka discloses that one of the first and the third display LEDs is a green display LED (G), and the other one is a blue display LED (column 8 lines 26-42; figure 4A).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Blossfeldt, Nakamura, Marion, Kovarik and Kimball with Tanaka by specifically providing that one of the first and the third display LEDs is a green display LED, and the other one is a blue display LED for the purpose of compensating for the difference in luminance of the three colors to improve the quality of the display and to achieve high density in a display (column 1 lines 60-65; column 2 lines 18-35).

Response to Arguments

6. Applicant's arguments filed 8/8/2008 have been fully considered but they are not persuasive.

On pages 10-11 of Applicant's remarks, Applicant argues that no single embodiment of Nakamura provides both the constant current circuit and at least two circuit blocks having a resistor circuit and an LED circuit in parallel.

The Examiner respectfully disagrees, because both the embodiment of figure 1 and the embodiment of figure 2 disclose the constant current circuit, where in the embodiment of figure 1 the constant current circuit is clearly the resistor 1 connected to ground and the power supply of -24 V, and in the embodiment of figure 2 the constant current circuit is specifically labeled as element 3 and also includes the power supply of -24V. This is clear from the figures, which show the 10 mA current value in figure 1, and the specification, where paragraph 13 states that, "This circuit block is connected to 10 circuit serial as well as the 1st above-mentioned example." Both of the embodiments include a constant current circuit.

On page 12 of Applicant's remarks, Applicant argues that Kovarik et al. does not disclose the claimed features.

The Examiner respectfully disagrees, because the Applicant asserts that Kovarik does not disclose the claimed features, but does not explain how Kovarik fails to disclose the claimed features.

On pages 12-14 of Applicant's remarks, Applicant argues that Blossfeldt and Marion do not disclose the claimed features.

The Examiner respectfully disagrees, because the Applicant asserts that Blossfeldt does not disclose the limitation that the resistors are connected in parallel with the LEDs, while in the previous office action the Examiner rejected this limitation as being anticipated by Nakamura. Further Applicant asserts that Marion does not disclose the claimed features, but does not explain how the reference fail to disclose the claimed features.

On pages 14-15 of Applicant's remarks, Applicant argues that Tanaka does not disclose the claimed features.

The Examiner respectfully disagrees, because the Applicant asserts that Tanaka does not disclose the claimed features, but does not explain how Tanaka fails to disclose the claimed features.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stuart McCommas whose telephone number is (571)270-3568. The examiner can normally be reached on Monday-Friday 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571)272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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